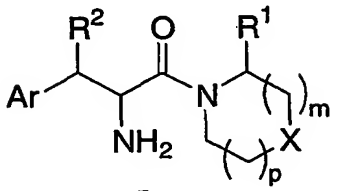
WHAT IS CLAIMED IS:

1. A compound of structural formula I:



I

or a pharmaceutically acceptable salt thereof; wherein
each n is independently 0, 1, or 2;
m and p are independently 0 or 1;
q is 1 or 2;

X is CH_2, S, CHF, or CF_2;

Ar is phenyl, unsubstituted or substituted with one to five R^3 substituents;

R^1 is hydrogen or cyano;

R^2 is selected from the group consisting of
C_{1-10} alkyl, wherein alkyl is unsubstituted or substituted with one to five substituents independently selected from halogen or hydroxy,
C_{2-10} alkenyl, wherein alkenyl is unsubstituted or substituted with one to five substituents independently selected from halogen or hydroxy,
$(CH_2)_n$-aryl, wherein aryl is unsubstituted or substituted with one to five substituents independently selected hydroxy, halogen, CO_2H, C_{1-6} alkyloxycarbonyl, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens,
$(CH_2)_n$-heteroaryl, wherein heteroaryl is unsubstituted or substituted with one to three substituents independently selected from hydroxy, halogen, CO_2H, C_{1-6} alkyloxycarbonyl, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens,

$(CH_2)_n$-heterocyclyl, wherein heterocyclyl is unsubstituted or substituted with one to three substituents independently selected from oxo, hydroxy, halogen, CO_2H, C_{1-6} alkyloxycarbonyl, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens,

$(CH_2)_n$-C_{3-6} cycloalkyl, wherein cycloalkyl is unsubstituted or substituted with one to three substituents independently selected from halogen, hydroxy, CO_2H, C_{1-6} alkyloxycarbonyl, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens,

$(CH_2)_nCOOH$,

$(CH_2)_nCOOC_{1-6}$ alkyl,

$(CH_2)_nCONR^4R^5$, wherein R^4 and R^5 are independently selected from the group consisting of hydrogen, tetrazolyl, thiazolyl, $(CH_2)_n$-phenyl, $(CH_2)_n$-C_{3-6} cycloalkyl, and C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five halogens and wherein phenyl and cycloalkyl are unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens;

or R^4 and R^5 together with the nitrogen atom to which they are attached form a heterocyclic ring selected from azetidine, pyrrolidine, piperidine, piperazine, and morpholine wherein said heterocyclic ring is unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens; and

wherein any methylene (CH_2) carbon atom in R^2 is unsubstituted or substituted with one to two groups independently selected from halogen, hydroxy, C_{1-4} alkyl, and C_{1-4} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens;

each R^3 is independently selected from the group consisting of

halogen,

cyano,

hydroxy,

C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five halogens,

C_{1-6} alkoxy, wherein alkoxy is unsubstituted or substituted with one to five halogens,

phenyloxy, unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, CO_2H, cyano, C_{1-6} alkyloxycarbonyl, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens;

$(CH_2)_n$-NR^4R^5,

$(CH_2)_n$-$CONR^4R^5$,

$(CH_2)_n$-$OCONR^4R^5$,

$(CH_2)_n$-SO_2NR^4R5,

$(CH_2)_n$-SO_2R^6,

$(CH_2)_n$-$NR^7SO_2R^6$,

$(CH_2)_n$-$NR^7CONR^4R^5$,

$(CH_2)_n$-NR^7COR^7,

$(CH_2)_n$-$NR^7CO_2R^6$,

$(CH_2)_n$-COOH,

$(CH_2)_n$-$COOC_{1-6}$ alkyl,

$(CH_2)_q$-aryl, wherein aryl is unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, CO_2H, C_{1-6} alkyloxycarbonyl, C_{1-6} alkyl, C_{3-6} cycloalkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens,

$(CH_2)_q$-heteroaryl, wherein heteroaryl is unsubstituted or substituted with one to three substituents independently selected from hydroxy, halogen, CO_2H, C_{1-6} alkyloxycarbonyl, C_{1-6} alkyl, C_{3-6} cycloalkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens,

$(CH_2)_q$-heterocyclyl, wherein heterocyclyl is unsubstituted or substituted with one to three substituents independently selected from oxo, hydroxy, halogen, CO_2H, C_{1-6} alkyloxycarbonyl, C_{1-6} alkyl, C_{3-6} cycloalkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens,

$(CH_2)_n$-C_{3-6} cycloalkyl, wherein cycloalkyl is unsubstituted or substituted with one to three substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens,

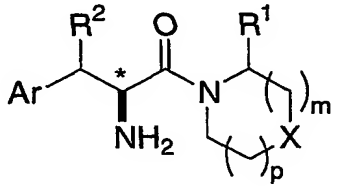
wherein any methylene (CH_2) carbon atom in R^3 is unsubstituted or substituted with one to two groups independently selected from halogen, hydroxy, C_{1-4} alkyl, and C_{1-4}

alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens;

R^6 is independently selected from the group consisting of tetrazolyl, thiazolyl, $(CH_2)_n$-phenyl, $(CH_2)_n$-C_{3-6} cycloalkyl, and C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five halogens and wherein phenyl and cycloalkyl are unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens, and wherein any methylene (CH_2) carbon atom in R^6 is unsubstituted or substituted with one to two groups independently selected from halogen, hydroxy, and C_{1-4} alkyl unsubstituted or substituted with one to five halogens; and

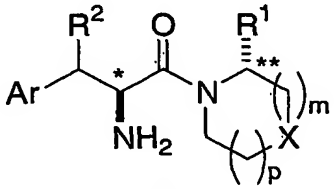
each R^7 is hydrogen or R^6.

2. The compound of Claim 1 wherein the carbon atom marked with an * has the stereochemical configuration as depicted in formula Ia:



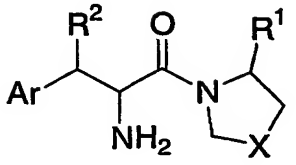
(Ia)

3. The compound of Claim 2 wherein the carbon atom attached to R^1 marked with an ** has the stereochemical configuration as depicted in formula Ib:



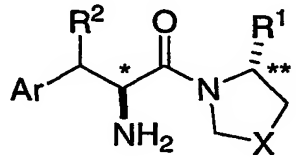
(Ib)

4. The compound of Claim 1 of the structural formula Ic:



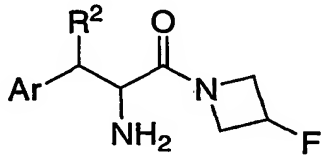
(Ic)

5. The compound of Claim 4 wherein the carbon atom marked with an * and the carbon atom marked with an ** have the stereochemical configurations as depicted in formula Id:



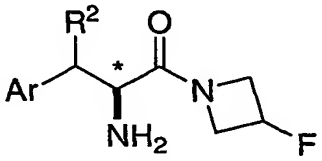
(Id)

6. The compound of Claim 1 of the structural formula Ie



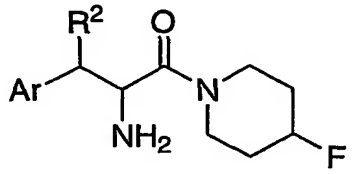
(Ie)

7. The compound of Claim 6 wherein the carbon atom marked with an * has the stereochemical configuration as depicted in formula If:



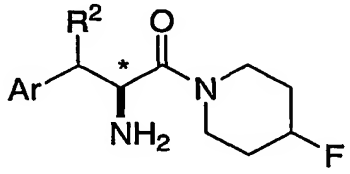
(If)

8. The compound of Claim 1 of the structural formula Ig



(Ig)

9. The compound of Claim 8 wherein the carbon atom marked with an * has the stereochemical configuration as depicted in formula Ih:



(Ih)

10. The compound of Claim 1 wherein R^2 is selected from the group consisting of

C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five substituents independently selected from halogen or hydroxy,

C_{2-6} alkenyl, wherein alkenyl is unsubstituted or substituted with one to five substituents independently selected from halogen or hydroxy,

$(CH_2)_n$-C_{3-6} cycloalkyl, wherein cycloalkyl is unsubstituted or substituted with one to three substituents independently selected from halogen, hydroxy, CO_2H, C_{1-6} alkyloxycarbonyl, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens,

$(CH_2)_nCOOH$,

$(CH_2)_nCOOC_{1-6}$ alkyl, and

$(CH_2)_nCONR^4R^5$, wherein R^4 and R^5 are independently selected from the group consisting of hydrogen, tetrazolyl, thiazolyl, $(CH_2)_n$-phenyl, $(CH_2)_n$-C_{3-6} cycloalkyl, and C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five halogens and wherein phenyl and cycloalkyl are unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens;

or R^4 and R^5 together with the nitrogen atom to which they are attached form a heterocyclic ring selected from pyrrolidine, piperidine, piperazine, and morpholine wherein said heterocyclic ring is unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens; and

wherein any methylene (CH_2) carbon atom in R^2 is unsubstituted or substituted with one to two groups independently selected from halogen, hydroxy, C_{1-4} alkyl, and C_{1-4} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens.

11. The compound of Claim 10 wherein R^2 is selected from the group consisting of

C_{1-3} alkyl, wherein alkyl is unsubstituted or substituted with one to five substituents independently selected from halogen or hydroxy,

CH_2-C_{3-6} cycloalkyl,

COOH,

$COOC_{1-6}$ alkyl, and

$CONR^4R^5$, wherein R^4 and R^5 are independently selected from the group consisting of hydrogen, tetrazolyl, thiazolyl, $(CH_2)_n$-phenyl, $(CH_2)_n$-C_{3-6} cycloalkyl, and C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five halogens and wherein phenyl and cycloalkyl are unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens;

or R^4 and R^5 together with the nitrogen atom to which they are attached form a heterocyclic ring selected from pyrrolidine, piperidine, piperazine, and morpholine wherein said heterocyclic ring is unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens.

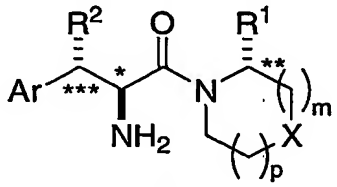
12. The compound of Claim 11 wherein R^2 is selected from the group consisting of

methyl,

ethyl,

CH_2-cyclopropyl,
COOH,
COOMe,
COOEt,
$CONMe_2$,
$CONH_2$,
CONHMe,
CONHEt,
pyrrolidin-1-ylcarbonyl,
azetidin-1-ylcarbonyl, and
[(tetrazol-5-yl)amino]carbonyl.

13. The compound of Claim 1 wherein the carbon atom marked with an *, the carbon atom attached to R^1 marked with an **, and the carbon atom attached to R^2 marked with an *** have the stereochemical configurations as depicted in formula Ii:



(Ii)

R^2 is selected from the group consisting of
C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five substituents independently selected from halogen or hydroxy,
$(CH_2)_n$-C_{3-6} cycloalkyl,
COOH,
$COOC_{1-6}$alkyl, and
$CONR^4R^5$, wherein R^4 and R^5 are independently selected from the group consisting of hydrogen, tetrazolyl, thiazolyl, $(CH_2)_n$-phenyl, $(CH_2)_n$-C_{3-6} cycloalkyl, and C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five halogens and wherein phenyl and cycloalkyl are unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens;

or wherein R^4 and R^5 together with the nitrogen atom to which they are attached form a heterocyclic ring selected from pyrrolidine, piperidine, piperazine, and morpholine wherein said heterocyclic ring is unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens; and

each R^3 is independently selected from the group consisting of:
halogen,
hydroxy,
C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five halogens,
C_{1-6} alkoxy, wherein alkoxy is unsubstituted or substituted with one to five halogens,
phenyloxy, unsubstituted or substituted with one to three substituents independently selected from halogen, hydroxy, cyano, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens; and
$(CH_2)_n$-C_{3-6} cycloalkyl, wherein cycloalkyl is unsubstituted or substituted with one to three substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens.

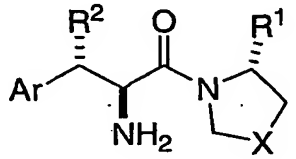
14. The compound of Claim 13 wherein R^2 is selected from the group consisting of
methyl,
ethyl,
CH_2-cyclopropyl,
COOH,
COOMe,
COOEt,
$CONMe_2$,
$CONH_2$,
CONHMe,
CONHEt,
pyrrolidin-1-ylcarbonyl,
azetidin-1-ylcarbonyl, and

[(tetrazol-5-yl)amino]carbonyl.

15. The compound of Claim 14 wherein R^3 is selected from the group consisting of:

fluoro,
chloro,
bromo,
trifluoromethyl,
trifluoromethoxy, and
methoxy.

16. The compound of Claim 1 of the structural formula Ij



(Ij)

wherein X is CH_2, S, CHF, or CF_2;

Ar is phenyl, unsubstituted or substituted with one to five R^3 substituents;

R^1 is hydrogen or cyano;

R^2 is selected from the group consisting of

C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five substituents independently selected from halogen or hydroxy,

$(CH_2)_n$-C_{3-6} cycloalkyl,

COOH,

$COOC_{1-6}$ alkyl, and

$CONR^4R^5$, wherein R^4 and R^5 are independently selected from the group consisting of hydrogen, tetrazolyl, thiazolyl, $(CH_2)_n$-phenyl, $(CH_2)_n$-C_{3-6} cycloalkyl, and C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five halogens and wherein phenyl and cycloalkyl are unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6}

alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens;

or R^4 and R^5 together with the nitrogen atom to which they are attached form a heterocyclic ring selected from pyrrolidine, piperidine, piperazine, and morpholine wherein said heterocyclic ring is unsubstituted or substituted with one to five substituents independently selected from halogen, hydroxy, C_{1-6} alkyl, and C_{1-6} alkoxy, wherein alkyl and alkoxy are unsubstituted or substituted with one to five halogens; and

each R^3 is independently selected from the group consisting of:

halogen,

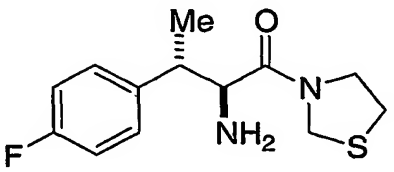
C_{1-6} alkyl, wherein alkyl is unsubstituted or substituted with one to five halogens,

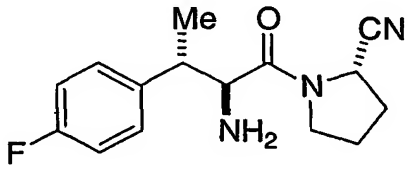
C_{1-6} alkoxy, wherein alkoxy is unsubstituted or substituted with one to five halogens,

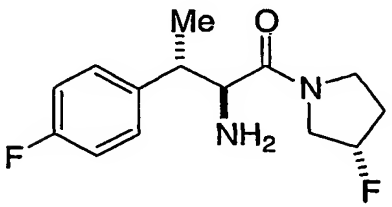
phenyloxy, unsubstituted or substituted with one to three substituents independently selected from halogen and cyano, and

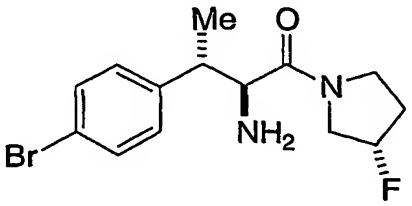
phenyl$(CH_2)_nCON(Me)$-, wherein phenyl is unsubstituted or substituted with one to three substituents independently selected from halogen, trifluoromethyl, and C_{1-4} alkyl.

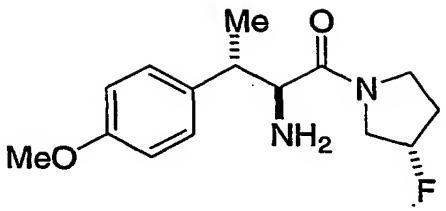
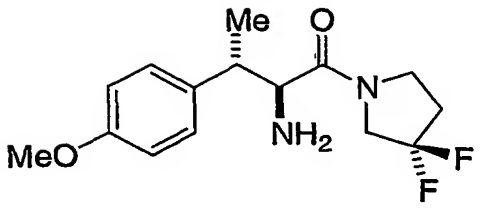
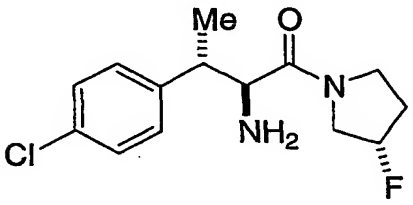
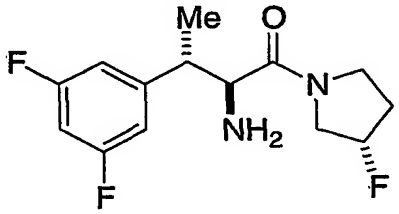
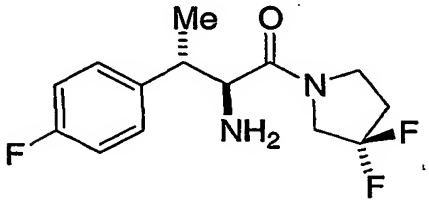
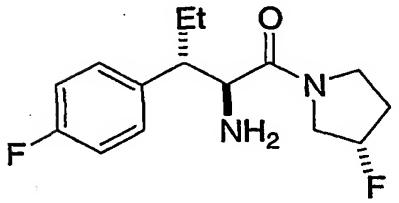
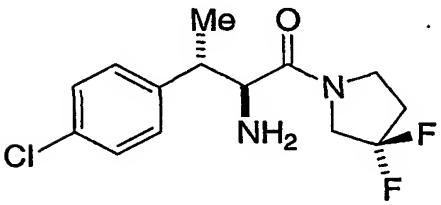
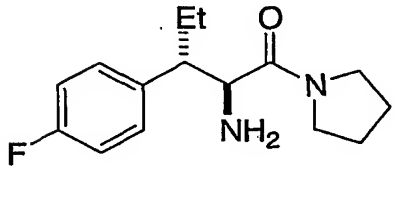
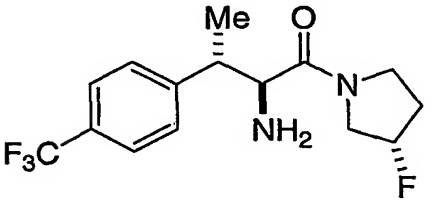
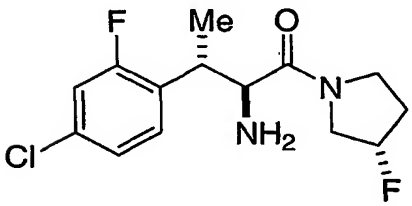
17. The compound of Claim 16 of the structural formula selected from the group consisting of



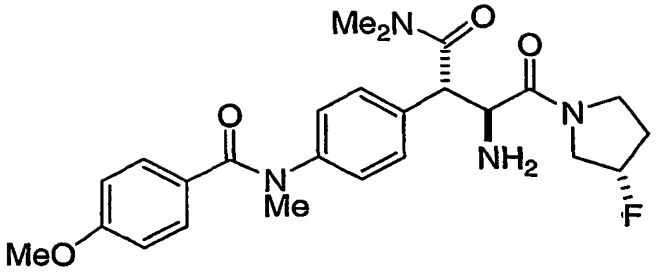




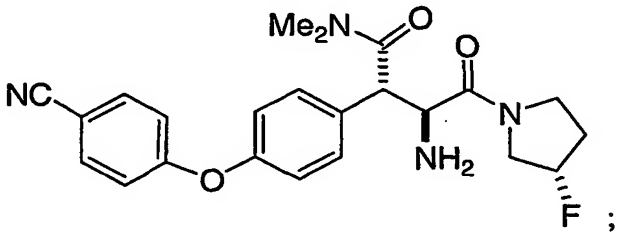


5



and



;

or a pharmaceutically acceptable salt thereof.

18. A pharmaceutical composition which comprises a compound of Claim 1 and a pharmaceutically acceptable carrier.

19. A method for inhibiting dipeptidyl peptidase-IV enzyme activity in a mammal in need thereof which comprises the administration to the mammal of an effective amount of a compound of Claim 1.

20. A method for treating diabetes in a mammal in need thereof which comprises the administration to the mammal of a therapeutically effective amount of a compound of Claim 1.

21. A method for treating non-insulin dependent (Type 2) diabetes in a mammal in need thereof which comprises the administration to the mammal of a therapeutically effective amount of a compound of Claim 1.

22. A method for treating hyperglycemia in a mammal in need thereof which comprises the administration to the mammal of a therapeutically effective amount of a compound of Claim 1.

23. A method for treating obesity in a mammal in need thereof which comprises the administration to the mammal of a therapeutically effective amount of a compound of Claim 1.

24. A method for treating one or more lipid disorders selected from the group of dyslipidemia, hyperlipidemia, hypertriglyceridemia, hypercholesterolemia, low HDL and high LDL in a mammal in need thereof which comprises the administration to the mammal of a therapeutically effective amount of a compound of Claim 1.

25. A method for treating in a mammal in need thereof one or more conditions selected from the group consisting of (1) hyperglycemia, (2) low glucose tolerance, (3) insulin resistance, (4) obesity, (5) lipid disorders, (6) dyslipidemia, (7) hyperlipidemia, (8) hypertriglyceridemia, (9) hypercholesterolemia, (10) low HDL levels, (11) high LDL levels, (12) atherosclerosis and its sequelae, (13) vascular restenosis, (14) irritable bowel syndrome, (15) inflammatory bowel disease, including Crohn's disease and ulcerative colitis, (16) other inflammatory conditions, (17) pancreatitis, (18) abdominal obesity, (19) neurodegenerative disease, (20) retinopathy, (21) nephropathy, (22) neuropathy, (23) Syndrome X, (24) ovarian hyperandrogenism (polycystic ovarian syndrome), and other disorders where insulin resistance is a component, wherein the method comprises the administration to the mammal a therapeutically effective amount of a compound of Claim 1.

26. The pharmaceutical composition of Claim 18 further comprising one or more additional active ingredients selected from the group consisting of:

(a) a second dipeptidyl peptidase IV inhibitor;

(b) an insulin sensitizer selected from the group consisting of a PPARγ agonist, a PPARα/γ dual agonist, a PPARα agonist, a biguanide, and a protein tyrosine phosphatase-1B inhibitor;

(c) an insulin or insulin mimetic;

(d) a sulfonylurea or other insulin secretagogue;

(e) an α-glucosidase inhibitor;

(f) a glucagon receptor antagonist;

(g) GLP-1, a GLP-1 mimetic, or a GLP-1 receptor agonist;

(h) GIP, a GIP mimetic, or a GIP receptor agonist;

(i) PACAP, a PACAP mimetic, or a PACAP receptor agonist;

(j) a cholesterol lowering agent such as (i) HMG-CoA reductase inhibitor, (ii) sequestrant, (iii) nicotinyl alcohol, nicotinic acid or a salt thereof, (iv) PPARα agonist, (v) PPARα/γ dual agonist, (vi) inhibitor of cholesterol absorption, (vii) acyl CoA:cholesterol acyltransferase inhibitor, and (viii) anti-oxidant;

(k) a PPARδ agonist;

(l) an antiobesity compound;

(m) an ileal bile acid transporter inhibitor;

(n) an anti-inflammatory agent; and

(o) an antihypertensive agent.

27. The pharmaceutical composition of Claim 26 wherein the PPARα/γ dual agonist is KRP-297.

28. A method of treating diabetes in a mammal in need thereof comprising administering to the mammal a therapeutically effective amount of a compound of Claim 1 in combination with the PPARα/γ dual agonist KRP-297.